Applicant: Bert Braune et al. Attorney's Docket No.: 12406-0112US1 / P2002,0914

Serial No.: 10/532,848

Filed : April 27, 2005

Page : 2 of 14

## Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

## **Listing of Claims:**

- 1. (Currently Amended) A method for producing an LED light source, <del>particularly</del> emprising mixed-color LEDs, wherein at least a portion of primary radiation emitted by a chip is transformed by luminescence conversion, comprising the steps of:
- preparing a chip comprising a front-side electrical contact in the form of an electrical contact surface, the front-side electrical contact being positioned on a principal radiation emitting surface of the LED light source,
- thickening said front-side electrical contact by applying an electrically conductive material to said electrical contact surface,
- partially coating said chip with a luminescence conversion material[[.]] so that at least a portion of the electrically conductive material is not coated with the conversion material.
- 2. (Currently Amended) The method as described in claim 1, wherein said luminescence conversion material comprises a radioparent matrix material that is replaced with and a phosphor material.
- 3. (Original) The method as described in claim 2, wherein said radioparent matrix material comprises  $SiO_2$  and/or  $Al_2O_3$ .
- 4. (Previously Presented) The method as described in claim 2, wherein said radioparent matrix material comprises an oxide and/or a nitride whose refractive index is between 1.5 and 3.4.

Applicant: Bert Braune et al. Attorney's Docket No.: 12406-0112US1 / P2002,0914

US N

Serial No.: 10/532,848 Filed : April 27, 2005

Page : 3 of 14

5. Canceled.

- 6. (Previously Presented) The method as described in claim 1, wherein the layer of luminescence conversion material is evened by thinning.
- 7. (Previously Presented) The method as described in claim 1, wherein monitoring of the color coordinates (CIE chromaticity diagram) of the LED light source is subsequently performed.
- 8. (Previously Presented) The method as described in claim 1, wherein the thickness of the layer of luminescence conversion material is adjusted by thinning it.
- 9. (Original) The method as described in claim 8, wherein during said thinning, the color coordinates of the LED light source are adjusted over the thickness of the layer of luminescence conversion material by being monitored.
- 10. (Previously Presented) The method as described in claim 1, wherein
- the chip emitting the primary radiation is disposed in a wafer composite with a multiplicity of additional similar chips,
- each of the method steps takes place simultaneously for the chips of the entire wafer composite,
  - the chips are subsequently singulated into LED light sources.
- (Original) The method as described in claim 10, wherein before the chips are coated with 11. luminescence conversion material, troughs are made along scribe lines between the individual chips, so that during the subsequent coating of the chips with luminescence conversion material said troughs are at least partially filled with luminescence conversion material.

Applicant : Bert Braune et al. Attorney's Docket No.: 12406-0112US1 / P2002,0914
Serial No.: 10/532,848

US N

Serial No.: 10/532,848 Filed: April 27, 2005

Page

: 4 of 14

12. (Original) The method as described in claim 10, wherein before the chips are coated with luminescence conversion material,

- the entire wafer composite is mounted with the underside on a carrier,
- the chips are singulated from the wafer composite in such a way that they continue to be held together on said carrier,
- during the coating of the chips, the lateral sides of the singulated chips are at least partially coated with luminescence conversion material,
- the chips are subsequently singulated into LED light sources from their composite held together by said carrier and said luminescence conversion material.
- 13. (Previously Presented) The method as described in claim 10, wherein before said chips are singulated into LED light sources their respective color coordinates and positions are determined and recorded, and after singulation the LED light sources are sorted on the basis of their color coordinates.
- 14. (Previously Presented) The method as described in claim 10, wherein before the chips are singulated the following method steps are performed:
- determining and recording the respective color coordinates and positions of the LED light sources,
- dividing the wafer into regions containing LED light sources that have similar color coordinates,
- adjusting the regions containing LED light sources that have similar color coordinates to a specific set of color coordinates by regionally selective thinning of the luminescence conversion material in the individual regions, and
- monitoring the color coordinates of one of the LED light sources of the region concerned.

Applicant: Bert Braune et al. Attorney's Docket No.: 12406-0112US1 / P2002,0914

US N

Serial No.: 10/532,848 Filed : April 27, 2005

Page : 5 of 14

15. (New) The method of claim 1, wherein the LED light source is a mixed color LED.

16. (New) The method of claim 1, wherein a maximum height of the luminescence conversion material above the principal radiation emitting surface is less than a maximum height of the electrically conductive material above the principal radiation emitting surface.

17. (New) A method for producing light sources, the method comprising:

preparing a plurality of light emitting chips, each comprising a front-side electrical contact in the form of an electrical contact surface, and disposing the plurality of chips in a wafer composite;

thickening the front-side electrical contact of each of the chips by applying an electrically conductive material to each electrical contact surface; and

coating each of the chips with a luminescence conversion material,

wherein prior to coating the chips with the luminescence conversion material, the wafer composite is mounted on a carrier material and the chips are at least partially singulated so that the chips remain attached to the wafer composite on the carrier material; and

wherein during coating of the chips with the luminescence conversion material, lateral surfaces of the at least partially singulated chips are at least partially coated with the luminescence conversion material.

- 18. (New) The method of claim 17, further comprising completing singulation of the plurality of chips from the wafer composite to form a plurality of separated LED light sources.
- 19. (New) The method of claim 17, wherein the electrically conductive material is applied to each member of the plurality of light emitting chips at the same time, and the luminescence conversion material is applied to each member of the plurality of light emitting chips at the same time.

Applicant: Bert Braune et al. Attorney's Docket No.: 12406-0112US1 / P2002,0914 US N

Serial No.: 10/532,848

Filed

: April 27, 2005

Page : 6 of 14

20. (New) The method of claim 17, wherein the carrier material comprises an adhesive film and/or a stretch film.

- 21. (New) The method of claim 20, wherein the carrier material comprises a stretch film, the method further comprising, prior to coating of the chips with the luminescent material, stretching the film to increasing spacings between at least some of the chips.
- 22. (New) The method of claim 21, wherein coating each of the chips with the luminescence conversion material comprises at least partially filling spaces between each of the chips on the stretched film with the luminescence conversion material.
- (New) The method of claim 21, wherein coating each of the chips with the luminescence 23. conversion material comprises completely filling spaces between each of the chips on the stretched film with the luminescence conversion material.